

### REMARKS

A marked-up version of the claims is enclosed. Claims 1-3 and 7-44 were pending, and claims 1, 3, 10, and 15 are now cancelled. The pending independent claims are now claims 2, 7, 19, 24, 33, and 39. This Official Action is the second Official Action in this case. The prior Official Action was dated February 8, 1999 and applicant's response thereto was dated May 7, 1999.

Page 2 of the Official Action states that claims 1-3 are rejected under 35 U.S.C. § 102 as anticipated by *Nagata* (JP 53-89753). However, in a telephone interview with the Examiner on December 9, 2002 the Examiner indicated that claims 1, 2, 7, 9, and 12 were actually meant to be the only claims rejected as anticipated by *Nagata*.

The non-final Official Action is correct that the *Nagata* reference does have some similarities to the present claimed invention, including the idea of vertical alignment of molecules in a liquid crystal layer absent an applied electric field. *Nagata* also discloses (page 2 of translation, third line from bottom) that the liquid crystal molecules possess positive dielectric anisotropy as claimed by present claims 9, 14, 21, 30, 34, and 40 (although the official action did not mention this feature).

Nevertheless, the applicant would like to respectfully point out that these features shared by the *Nagata* patent are not critical to the novelty of the present claimed invention. There are additional novel features of this invention aside from the homeotropic alignment.

#### The Compensating Plate is Very Inventive

The present claimed invention employs an optical compensating plate in a way that greatly improves contrast ratio (see page 31, lines 23-26), and this feature was explicitly claimed by present independent claims 19, 24, 33, and 39 as well as various dependent claims (e.g. 10, 11, 15, and 16). Applicant respectfully traverses the assertion in the Official Action that these particular compensating plates are "notoriously well known" as a means to improve contrast with homeotropically aligned liquid crystal molecules. See MPEP § 2144.03, second

paragraph ("If the applicant traverses such an assertion the examiner should cite a reference in support of his or her position").

As described at page 21, lines 30-33, the present compensating plate compensates for the anisotropic refractive index of the LCD panel. The present inventors have found that using a compensating plate is much more effective than, for example, an approach like *Nagata's* in which the contrast ratio is increased merely by relying upon a polarization filter (see page 4 of *Nagata*, second paragraph). This compensating plate is a "great" improvement (see page 31 of the application, line 26).

As *Nagata* makes clear, polarization filters increase the contrast ratio. Therefore, it is not obvious to also use a compensating plate (e.g. see independent claim 33 including both a polarizer and a compensating plate). It is not obvious that the compensating plate will greatly increase the contrast ratio beyond what can be accomplished with *Nagata's* polarization filter.

The non-final Official Action also did not identify in *Nagata* any suggestion, teaching, or motivation to combine *Nagata* with a compensating plate, contrary to the recent holding in *In Re Sang Su-Lee* (CAFC 2002, 00-1158, Serial No. 07/631,240). In that case, the CAFC reiterated that "a showing of a suggestion, teaching, or motivation to combine the prior art references is an essential component of an obviousness holding." Likewise, the mere fact that references can be combined does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990).

As described at page 15 of the application, lines 21-37, the compensating plate can be used in conjunction with a polarizer. The compensating plate of the present invention is further described at page 20 of the application, lines 16-34 and also at page 21 of the application, lines 20-34. Using a compensating plate in the context of the present claimed invention is entirely nonobvious, as demonstrated, for example, by *Nagata's* failure to employ such a feature. The non-final Official Action has not identified a compensating plate utilized in any reference, much less a motivation for combining such a feature with *Nagata* which already has a strategy for increasing the contrast ratio (see page 4 of translation, second paragraph).

The Homeotropic Alignment Layer of this Invention is Not Notoriously Well Known

Claim 3 of the present application, the limitations of which are now inserted into claim 1, describes a homeotropic alignment layer. The non-final Official Action (page 3, second full paragraph) acknowledges that the *Nagata* reference discloses no such layer, but asserts that this feature is notoriously well known as a means to reduce display blemishes. Of course, that is not the purpose for such a layer according to the present invention, which is not directed at reducing display blemishes. Thus, even assuming that these alignment layers are notoriously well known, and are disclosed in a pertinent reference that has not yet been identified, still there is no motivation to combine references. Reducing display blemishes is nowhere addressed in the present application, and blemishes are not a problem that needs to be addressed in the present context.

Applicant respectfully traverses the assertion in the Official Action that the particular alignment layer of the present invention is "notoriously well known." See MPEP § 2144.03, second paragraph ("If the applicant traverses such an assertion the examiner should cite a reference in support of his or her position").

Moreover, the non-final Official Action did not identify in *Nagata* any suggestion, teaching, or motivation to combine *Nagata* with an alignment layer, contrary to the recent holding in *In Re Sang Su-Lee* (CAFC 2002, 00-1158, Serial No. 07/631,240). In that case, the CAFC reiterated that "a showing of a suggestion, teaching, or motivation to combine the prior art references is an essential component of an obviousness holding." Likewise, the mere fact that references can be combined does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990).

Claim Amendments

Independent claim 1 is now cancelled. Independent claim 2 is amended merely by inserting the limitations of claim 3. Independent claim 7 is now amended to include the compensating plate. No new issues are raised. The limitations of claim 10 are simply inserted into claim 7. Independent claims 1-3, 10 and 15 are cancelled, and the dependency of claim 16 is amended accordingly.


**Conclusion**

Applicant respectfully submits that the claims of the present application define patentable subject matter and are patentably distinguishable over the cited reference for the reasons explained. Allowance of the pending claims is therefore earnestly solicited.

Respectfully submitted,

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MARKED-UP VERSION SHOWING CHANGES MADE

1. CANCEL

2. (Amended) A method for producing two domains within a liquid crystal layer comprising the steps of:

forming a first electrode and a second electrode on a surface of a substrate, the electrodes being separated from each other by a selected distance;

forming a liquid crystal layer having liquid crystal molecules on the substrate surface with the liquid crystal molecules aligned vertically with respect to the substrate surface; and

applying an electric field between the two electrodes, wherein a domain boundary is formed midway between the electrodes within the liquid crystal layer,

wherein the step of forming the liquid crystal layer comprises steps of forming a homeotropic alignment layer on the substrate surface on which the first and second electrodes are formed, and forming the liquid crystal layer on the homeotropic alignment layer.

3. CANCEL

7. (Amended) A liquid crystal display device comprising:

a base substrate having a surface;

a first electrode formed on the surface of the base substrate;

a second electrode formed on the same surface of the base substrate, wherein the first electrode and the second electrode are spaced apart for application of an electric field therebetween;

a liquid crystal layer formed on the base substrate surface and including liquid crystal molecules[, the liquid crystal molecules] for alignment normal to the base substrate surface in an absence of the electric field between the two electrodes; and

a second substrate together with said base substrate and said liquid crystal layer forming a panel upon which an optical compensating plate is formed,

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wherein in the presence of the electric field between the two electrodes, the molecules are tilted towards a central region between the two electrodes.

10. CANCEL

15. CANCEL

16. (Amended) The liquid crystal display of claim [15] 8, wherein the optical compensating plate is made of a liquid crystal film including the negatively birefringent index molecules.